

MINUTES

of the RadioAstron Teleconference on January 17, 2012

Yu.Yu. Kovalev chaired the teleconference.

1. Single-dish SRT tests status

M. Popov informed the participants on the current status of single-dish SRT tests. It is not so numerous now. Main observations are made in interferometric mode but we still continuing boresighting on 3C84 to keep our understanding of the sensitivity at K & C bands and to measure the pointing offsets (1-2'). The reason to continue this boresighting is that K band is separated in 6 sub-bands and each time we switch to different one to compare beam and sensitivity at this bands. Joining the second item of the agenda, M. Popov added that we are close to the end of fringe-search stage and today we have observations on RAFS09 of 12 observations in January. They are in L band in so called coherent mode (up –down link mode). Sources with very small baseline projections are chosen. Sessions are going to be separated in two: one hour in hydrogen maser synchronization mode and second hour – in up-down loop mode to compare these modes of operation. On Jan 21 high frequency experiment is planned with small baseline projections with GBT, EF and other telescopes. Last fringe search experiment in January will be on pulsar. We have already experiment on pulsar 0930+08 on Jan 13 with Arecibo and WSRT at 92 cm and data have been transported to data processing center. All fringe search experiments in terms of technical performance were successful. M. Popov also noted the experiment on BL Lac with growing baselines (6 segments from 25000 to 200000 km) at the end of December with no fringes found yet. The results of these experiments are reported in next item by V. Kostenko. There are some problems with quality of the recorded data. Some efforts are made to improve the recording facility and for this purposes we use the observations of the pulsars giant impulses.

Yu.Yu. Kovalev added: At the end of December we have introduced the pointing correction of 0.2' that is important for K band. Our tests have shown that this correction was introduced correctly.

W. Cannon: What was the frequency of the experiment with growing baselines?

M. Popov: 6 & 18 cm simultaneously. Ground array was divided in 2 sub-arrays.

2. Fringe search results update

V. Kostenko informed the participants that for the moment about 17.5 hours of observations have collected and 60% of success in correlation of data. Positive results were received for different baselines at L (W3OH, 0212+735) & K band (Ori KL) presumably. BL Lac was observed with no pronounced positive results at L- and C bands. For 0212+735 data baselines up to 135000 km received in good fashion. Images with great constrains in uv-plane were received. The correlation time was as large 1000s for L band with Effelsberg, Epatory baselines of RA and 400s for K-band (Effelsberg-RA). Sensitivity for Ori KL was excellent to estimate correlated spectra parameters as polarizations, fringe rates etc. But of cause in frame of short time spans it wasn't possible to make precise estimates of these parameters. We supplied the specialist of Keldish institute with obtained values of delays to improve orbit prediction. We need to look close to failed C-band observations of BL Lac.

Yu.Yu. Kovalev summarized:

1) From previous teleconference the following has happened. We have analyzed the fringe search observations of BL Lac which has happened at C & L bands from medium to large baselines up to 25 Earth diameters. We were unable to find fringes at C & L bands at large projections. The BL Lac went through the largest in nearest years outburst during December 2011. It might have happened that core size has increased its size significantly.

2) We had 2 observing segments in December in K band and we have positive result on Ori KL. We got fringes on Ori KL at different baselines of 10 Earth diameters (SRT – Effelsberg). Another experiment has happened on December 27 with GBT and SRT supported by other ground radio telescopes. Despite near zero length baselines on GBT – RA no fringes were found at K band. Moreover, no fringes were found in K band on Earth baselines (GBT – “Quasar” network). The reason is truly bad weather at GBT site on December 27. However fringes were found at L band on Evpatory – SRT baseline.

3) We are having another attempt at K band on continuum source on January 21 with GBT, EF and another telescopes.

W. Cannon: What was the maximum baseline at which fringes were detected?

Yu.Yu. Kovalev: Ori KL – 10 Earth, BL Lac – 1 Earth.

4. **L. Gurvits:** Considerations for RA scheduling and orbit determinations

So far we observed RA as target twice 14 Nov - 21 Jan. We are going to repeat several attempts like this. Now there is a considerable lag in providing orbit determination data sufficient for good pointing even small antennas. The data on orbit we use are not related available. We supplied specialists of Keldish institute with November measurements. It is too late but in normal operation scenario we can do this really quickly provided we really minimize the lag between availability of the best orbit prediction and particular observing run (3-4 days, maximum 1 week). Now the difference between the predicted orbit and the one actually seen is several tens of kilometers which is too large difference. The way to improve orbit determination is certainly in our case. Now we are waiting the results of evaluation from Keldish institute.

In addition we are looking for providing tracking near perigee in the next several weeks.

Yu.Yu. Kovalev: noted that ASC specialists are working in parallel with the specialists of the Institute of the Applied Mathematics on the quality of the orbit and we hope it will improved shortly.

5. **Yu.Yu. Kovalev** Early science program update

We are right now in the transitional period and will continue fringe search on different bands as long as on shortest and longest baseline projections but already planning and thinking on the ESP to start in February/March within a number of improved proposals on EVN. 2 projects are already scheduled and others are scheduling right now. February 1 deadline is coming and working groups are starting to working on proposals. The highest priority thing for us now is to apply to GBT observing time because this is our first and the last chance to ask for a time for the second half of 2012 and that is the working groups are starting to do right now.

6. **N. Kardashev** Tracking stations outside Russia update

We have some final decision about the special funding of the tracking station in Green Bank. Yesterday we received the formal letter about such decision of the Russian Space agency and today we prepared it and sent it to NRAO director. It is about the need to prepare the contract between the Astro Space Center and NRAO and ASC will prepare the contract with ROSCOSMOC and details will be discussed in a special meeting in the nearest future. I expect that the station will be operational at the end of this year (maybe early). About other stations we have not much information on successful decision. Final decision about tracking stations in South Africa and New Zealand will be presumably in February. We have special electronics for such stations but we have no real documents for the final stage of the such decision.

Karen O'Neil: said that people at NRAO site were very pleased to see the copy of this letter today.

Yu.Yu. Kovalev: We will make the decision on small team of people to discuss it in person.

Roy Booth: commented the situation with available facilities in South Africa.

Sergei Gulyaev: reported that people at New Zealand site are open for discussions.

Yu.Yu. Kovalev: thanked Segrei. He also confirmed that the next step in this direction should be done by us.

7. **Yu.Yu. Kovalev:** RISC reorganization and June RISC meeting.

We reconfirm that we are planning the RISK reorganization soon. We are starting to work on this and this is requiring decisions to be made and letters to be send around. We vision the RISC to be organized in the same way as it was in the past. We'll suggest week or two in June and email the participants and will ask to choose one. Ilya Pashchenko will start working with this action item.

8. **N.S. Kardashev:** next teleconference to be held in the February, 13-17th of 2012 year.

List of participants:

Carl Gwinn	< cgwinn@physics.ucsb.edu >
Karen O'Neil	< koneil@nrao.edu >
Ken Kellermann	< kkellerm@nrao.edu >
Leonia Kogan	< lkogan@nrao.edu >
Matt Lister	< mlister@physics.purdue.edu >
Norbert Bartel	< bartel@yorku.ca >
Sergei Gulyaev	< sergei.gulyaev@aut.ac.nz >
Willem Baan	< baan@astron.nl >
Richard Porcas	< p222rwp@mpifr-bonn.mpg.de >
Marcello Giroletti	< m.giroletti@ira.inaf.it >
Jon Romney	< jromney@nrao.edu >
Wayne Cannon	< wayne@sql.sci.yorku.ca >
Kostenko Vladimir	< vkostenko@asc.rssi.ru >
ASAKI Yoshiharu	< asaki@vsop.isas.jaxa.jp >
Vladimir Andreyanov	< andre@asc.rssi.ru >

Mikhail Popov <mpopov@asc.rssi.ru>
Yuri Y. Kovalev <yyk@asc.rssi.ru>
Nikolay Kardashev <nkardash@asc.rssi.ru>
Leonid Gurvits <lgurvits@jive.nl>